

Wolff Bottle (Tinkler)

Purpose

To demonstrate the faster diffusion rate of hydrogen gas compared with air.

Materials

Wolff bottle

stoppered bell jar

Hydrogen gas

porous cylinder

colored water

one hole stopper

bent glass tubing

Set up:



Procedure

1. Assemble the set-up as shown above.
2. Place the bell jar over the porous cylinder and pump hydrogen gas under the bell jar.
3. The colored water in the Wolff bottle will stream out through the bent glass tubing.

Additional Information

1. Because the hydrogen can travel into the porous cylinder faster than air can travel out of it, the pressure increases inside the cylinder. This causes the water to escape via the tubing.

Questions for the Students

1. How does the pressure inside the bell jar compare to the atmospheric pressure as hydrogen is added to it?
2. How does the pressure inside the porous cylinder compare to the atmospheric pressure as hydrogen flows into the bell jar? Explain.

Reference

University of Illinois, Urbana-Champaign